DOCUMENT RESUME

ED 212 111 EC 141 514

AUTHOR Swartz, Stanley L.; And Others
TITLE The Use of Time-Out in a Residential Treatment Program for Emotionally Disturbed Children.
INSTITUTION Western Illinois Univ., Macomb. Coll. of Education.
PUB DATE Nov 81
NOTE 31p.; Conference on Severe Behavior Disorders of Children and Youth (Tempe, AZ, November, 1981).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Behavior Modification; Behavior Problems; Elementary Secondary Education; *Emotional Disturbances; Intervention; Longitudinal Studies; *Program Effectiveness; Residential Programs; *Timeout

ABSTRACT

Literature is reviewed on the use of timeout as exclusion and isolation with behavior problem children. Considerations in designing timeout procedures are noted, and the effectiveness of timeout when viewed as a punishment is discussed. Legal challenges to behavior modification uses are briefly addressed. A longitudinal study involving 29 emotionally disturbed children (6 to 13 years old) in a residential treatment program revealed that, based on timeout frequencies, both exclusion (E:TO) and isolation (I:TO) timeouts appeared to result in short-term control rather than alteration of problem behavior. Data indicated that E:TO can have an exacerbating or additive effect, and that I:TO efficacy is greater with lower severity behaviors and for shorter durations. It is concluded that the use of timeout as an intervention underlying an entire treatment program seems ill-advised and unlikely to meet the children's individual treatment goals. (CL)

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THE USE OF TIME-OUT IN A RESIDENTIAL TREATMENT PROGRAM FOR EMOTIONALLY DISTURBED CHILDREN

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Conference on Severe Behavior Disorders
of Children and Youth
Arizona State University
November 1981

EC141514

ABSTRACT

The use of time-out as a behavior modification technique continues to generate both interest and concern. This paper summarizes the findings of a longitudinal study of the effects of time-out on children with severe emotional and behavior disorders in a residential treatment program.

A review of the research literature as well as data collected on exclusion time-out and isolation time-out will be analyzed relative to implications for use in a variety of educational and therapeutic settings. The general efficacy of time-out as a behavior modification technique is discussed.

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The authors would like to thank Vern Carlson, Janet Swartz, Dr. Wayne Wiggins, Sharon Kimbro, Hyun Sook Park and Esther Nelson for technical assistance.

THEORETICAL PERSPECTIVE

Behavior modification is based on two basic theoretical premises: 1) all behaviors are learned, and, 2) no behavior is exhibited that is not reinforced. Behavior modification techniques generally, and the use of time-out specifically, are successful only when applied with the parameters of these two premises.

Behavior patterns are not spontaneously manifested nor are they undifferentiated except in the psychotic client. Behaviors are learned in response to specific stimulus and reinforcement and, regardless of how bizarre or atypical a specific behavior might be, they are purposeful and confined to a cause and effect relationship. Children are not born with a specific set of behaviors nor are they predisposed to respond in specific ways. All behaviors are learned and more importantly, in the case of the behavior disordered or emotionally disturbed child, behaviors that are learned can be unlearned.

It is generally agreed that individuals will exhibit desired behaviors in return for appropriate and valued rewards. This is generally a process that can be measured and readily observed. It is also true that all human striving is toward some reinforcement for behaviors, activities or accomplishments. As the behaviors become more sophisticated and complex it is often difficult to identify the accompanying reinforcement without a careful analysis.

It is important to remember that behaviors are not exhibited without some reasonable expectation that they are going to be reinforced, either positively or negatively. In the absence of some reinforcement even a

behavior that has been strongly reinforced during some preceding period will rapidly fade. Though it is possible for some behaviors to be internally or self-reinforcing, and therefore outside of the immediate range of control, most children and adolescents are highly dependent on external reinforcement systems (tangible and peer or adult approval). Because the reinforcer of a specific behavior or behavior pattern cannot be identified, it does not mean that the reinforcer is not operating.

If we translate these principles into the classroom or residential setting we must realize that the environment represents a very complex set of potential reinforcers. When a child has exhibited a specific behavior or set of behaviors it is probable that a variety of factors or influences in his environment are reinforcing this behavior. If we know that behaviors must be reinforced then we also know that a particular behavior can be eliminated by removing the reinforcement. This is the basic assumption underlying the use of time-out. If something in the child's environment is reinforcing a behavior there are two available options: 1) remove the reinforcer from the child, or 2) remove the child from the reinforcer. We choose option two when we cannot identify the reinforcer or for some reason cannot remove it. Time-out represents an attempt to isolate the child in an area that is as free of reinforcement as possible in an attempt to eliminate an undesired behavior. It is the assumption that the bahavior will be eliminated because the child no longer has access to the reinforcer. Given this theoretical base it is clear that the use of time-out is a limited behavior change technique.

If a child's behavior was self-reinforced, time-out would not constitute a removal of reinforcement and would be unlikely to work. If removed

to the time-out area was sufficiently reinforcing in itself it would also be unlikely to work. It is probable that the inappropriate use of time-out will result in an escalation of behaviors that suggest the need for time-out and that the inadequately trained teacher or counselor will exercise the option more frequently and without the appropriate use of intermediate steps.

Time-out should be restricted to the unusual circumstance for which the cause (reinforcement) of a child's behavior cannot be identified or when the identified reinforcer of a child's behavior cannot be controlled or removed. Given these prerequisites the severity of the behavior should be such that all alternative control techniques have been exhausted and unsuccessful.

REVIEW OF THE LITERATURE

Definitions

Time-out has been variously defined and its appropriate use generally considered to be restricting access to positive reinforcement. Sloane, Buckholdt, Jenson, and Crandall (1979) refer to time-out as an extremely effective response-weakening consequence.

> In its most basic form, time-out is a procedure which excludes a pupil for a period of time from the opportunity to receive any reinforcement, peer attention, teacher attention, activities, tokens, points and so on. Denial of any reinforcement for a set time is, of course, contingent upon some specified behavior. (p. 115)

Hewett and Taylor (1968) noted that "theoretically, the use of time-out procedures is supposed to involve "losing something you want" (i.e., lack of opportunity to receive positive reinforcement in the classroom, p. 119). Leitenberg (1965) stated that although time-out cannot be defined by certain specific principles, one basic feature is essential, "a period of time in which positive reinforcement is no longer available" (p. 428).

Sloane et al., (1979) stressed that time-out from positive reinforcement is like extinction in two ways: 1) reinforcers are not delivered following the targeted behavior, and 2) reinforcers already in the pupil's possession are not taken away (p. 115). The difference between time-out and extinction is that in extinction reinforcing stimuli are withheld on a permanent basis.

Time-out is described by Plutchik, Karosu, Conte, Siegel, and Jarrett (1978) as "a behavioral procedure which involves the temporary suspension of access to positive reinforcement" (p. 577). This procedure is used by placing an individual who has just displayed an inappropriate behavior

into a nonreinforcing solitary environment. Isolation was identified as the most common form of time-out.

It should be noted that time-out is distinguished from punishment in the literature (Sloane et al., 1979; Sulzer-Azaroff and Mayer, 1977; Clarizio and McCoy, 1976). "Punishment involves the presentation of an aversive stimulus...time-out...procedures lead to removal of positive stimuli contingent upon a response" (Sulzer-Azaroff and Mayer, 1977, p. 142). Clarizio and McCoy (1976) stated that "the word punishment connotes inhumane treatment, negative attitudes, and hostile acts" (p. 507).

Time-out from Activities

A variety of methods may be used to implement a time-out procedure. One of the most common methods employed is concluding the activities the child is engaged in without placing the child in isolation. Sloane et al. (1979) noted that "time-out without isolation may be used spontaneously as part of the minute-by-minute interaction between teacher and pupil, or it may be used in a more formal program. The teacher must withhold all reinforcement without removing the pupil from the classroom" (p. 116). Sloane et al., (1979) continued to discribe various uses of this technique which include ignoring the pupil for a brief period or use of a timer that regulates the amount of time a pupil will not receive any reinforcement.

The effects of labeled and unlabeled praise and time-out were compared in an experiment by Bernhardt, Fredericks, and Forbach (1978) involving 60 preschool children. As predicted:

> both labeled praise and time-out groups showed significantly more correct and less incorrect behavior, respectively, on the task...than comparable groups receiving unlabeled consequences. The time-out procedure, inaccessability

> of a reinforced response, was effective only when a description of the incorrect response accompanied the negative consequence. Results did not confirm the prediction that the group given both labeled praise and labeled time-out would show more correct and less incorrect responding than groups receiving a description of only one dimension (p. 772).

Spitalnik and Drabman (1976) designed a time-out procedure within a classroom and assessed the effectiveness of the single procedure of time-out exclusive of any other treatment. Time-out from positive reinforcement occurred when a disruptive vocalization was exhibited; and was found to be an effective form of reinforcement. Husted, Hall, and Agin (1971) used time-out in a design that placed children in a circle for 15 minute sessions and time-out from positive reinforcement consisted of removal from the circle for physical aggression toward self or others, and hyperactivity for between ten seconds to two minutes. Results indicated that time-out proved effective while the children participated in the session; however, after the sessions were discontinued the "children did not generalize more complex social behaviors learned in therapy" (p. 194).

Solnick, Rincover, and Peterson (1977) also investigated the use of reinforcement and punishment in time-out with an autistic child. Time-out consisted of the teacher leaving the presence of the child whenever a tantrum occurred. The tantrums increased during the procedure; as the time-out appeared to reinforce rather than punish the behavior. The authors attributed this phenomena to the opportunity that presented itself to the child to engage in self-stimulatory behavior during the time-out.

Time-out/Isolation

Time-out from positive reinforcement in which isolation occurs takes the form of various procedures implemented with a variety of inappropriate and damaging behaviors. Isolation is frequently used as a technique of final choice in severe psychiatric cases.

Tyler and Brown (1967) reported the use of a time-out room with 15 boys ages 13-15 who had been placed in a training school cottage by the courts. The study focused on the inappropriate behavior displayed by the boys around the pool table. To institute change in this behavior the program was implemented in three phases. In phase one the child was placed in a 4 x 8 foot time-out room for 15 minutes without any verbalization from the staff. In phase two, the child was reprimanded for inappropriate behavior but the time-out room was not used. Phase three combined the reprimand and placement in the time-out room. Results indicated that under both punishment and no punishment conditions behavior changed; however, "under punishment conditions there was a decline in the rate of offending and under non-punishment conditions an increase in the rate of offending " (p. 6).

Maier (1970) investigated the use of sensory deprivation therapy in a 5 year old autistic child targeting severe withdrawal. The child was placed in an isolation room that measured 11 x 10½ feet and contained a 4½ foot square bathroon with a toilet and sink. The room was bare except for a mattress on the floor. The author noted that "the intent was to produce an environment with a minimum of personal contact exclusive of the therapist, and a minimum of inanimate objects that might be utilized in a defensive way" (p. 230). The child's isolation lasted 74 days;

during that time stimuli was increased until finally he was allowed to roam freely from his room. Upon completion of the restrictive therapy the child returned home and Maier noted that the child had improved significantly in his "ability to relate to other people and adapt to his environment" (p. 245).

Wahler (1969) studied the effectiveness of parental use of isolation in the home with five families with oppositional children. Wahler noted that:

> A time-out procedure proved effective in obtaining therapeutic results. In this procedure, the parents were instructed to isolate their children (in their bedrooms) immediately after oppositional behavior occurred, and to continue their social approval after cooperative behavior (p. 161).

The study did not reflect a change in frequency of baseline behavior from the oppositional behavior that took place during the procedure. To examine the failure of this investigation, Wahler continued with a more extensive probe into oppositional children; this time, however, he was also testing the assumption that the time-out procedure was not effective because the parents were not reinforcing to their children. Continued investigation indicated that a combination of time-out and the use of a differential attention program proved quite successful in eliminating oppositional behavior and that, as a result of Wahler's program, parental reinforcement value could be increased.

Time-out Parameters

MacDonough and Forehand (1973) discussed the parameters of response contingent time-out techniques that need to considered in treatment and research with children. The authors identify eight parameters of time-out:

1. Verbalized reasons - should the child be told why he is being placed in time-out. There is no clear evidence relating a verbalized reason for time-out and the effectiveness of time-out.

2. Warning - the child is warned that time-out is imminent unless his behavior changes.

3. Administration - (Instructional or physical) - this consideration applies only to isolation time-out and contrasts instructing a child to go into time-out with physically forcing him to go. The method employed is typically a function of the resistence of time-out manifested by the child. With high intensity antisocial behaviors (such as kicking, pushing, biting, and scratching), it may be necessary to use physical force to implement time-out. When possible it would seem preferrable to use instructions rather than physical force. By using instructions, aggression is not modeled, unless interaction between adult and child occurs, and the child is given the responsibility of self-adminstering part of the time-out.

4. Location - should time-out use isolation in a separate area or isolation in the same area in which the act took place. The primary advantage of the separate-area technique is an increase in the probability that positive reinforcement will be effectively removed during time-out. With same-area time-out, the supervisory adult may unintentionally provide intermittent reinforcement. Also, there may be sources of reinforcement that are not under the adults control. However, a separate isolation room may not be available; consequently, isolation would be restricted to the area in which the behavior occurs. The same-area process places more responsibility on the controlling adult to enforce the time-out: separate area time-out is enforced by a locked or closed door whereas same-area time-out is enforced by the authority figure. When a choice is possible, the behavior of the child during time-out and the degree to which the environment is conducive to reinforcement of time-out should be factors in determining which procedure to employ.

5. Duration - no general agreement exists regarding the most appropriate length of a time-out. However, some evidence does exist that short duration is efffective (5 - 10 minutes) as long as time-out of greater duration is not introduced.

6. Time-out Stimulus - improvements in technology should make possible the use of an automated signal to monitor the onset and completion of time-out. For example, once a child enters the time-out area and sits on a chair, a pressure plate fastened on the seat of the chair could start a clock (visable to the child). Once the required amount of time for release is reached, the child would immediately know he could leave the time-out area on his own. This would allow a self-regulation response to be made, rather than requiring adult monitoring. Later the adult could check the clock to see that the required amount of time had been acquired.

7. Schedule - since the administration of time-out has always been on a continuous schedule in clinical studies with children, the relative effectiveness of intermittent and continuous time-out cannot be compared. Of course when undesirable behavior is effectively suppressed with a few time-outs, the point is merely an academic one.

8. Release from time-out - should the duration of time-out be contingent on behavior occurring during the time-out? A fixed duration release could involve a child still exhibiting behaviors and the possibility of release reinforcing the behavior. On the other hand, contingent release might overlook behaviors resistant or inappropriate for time-out techniques.

Each of these considerations is important in designing a time-out procedure to insure consistent application and maximum program benefit.

Charney (1963) stated that the use of isolation "is considered a last stage approach to the management of a continuing crisis of acting-out when the child has been able to stalemate all other staff resources " (p. 50). The author explains the parameters of the technique and emphasizes the need for the child to be away from any stimuli; "to insulate the child from defenses available to him in the everyday living environment against experiencing his dependent demands on the staff and his family" (p. 50).

Time-out as a Punishment

By definition, time-out is not punishment; however, its use as a punishment is clear in various studies. Leitenberg (1965) concluded from a review of studies using time-out that its delineation from punishment is not clear. He found that:

> the design of studies demonstrating avoidance and escape from time-out allow another interpretation than that time-out is aversive...Other punishment studies, however, provide reasonably adequate evidence that time-out is an effective punishing stimulus...the most convincing evidence that time-out is aversive comes from those studies demonstrating escape from stimuli which previously set the occasion for non-reinforcement (p. 439).

Much of the literature reviewed ignores the theoretical premise of time-out and uses exclusion or isolation as a punishment. Noting that the "exact function of the time-out procedure...remains an area of ambiguity pending further experimental analysis" (p. 81), Barton, Guess, Garcia, and Baer (1970), in a study involving retardates, used time-out conditions that they defined as punishment. Using a multiple baseline design the authors focused on undesirable mealtime behaviors and removed the subject's meal from him for inappropriate behavior. Solnick et al. (1977) noted "time-out from reinforcement...is perhaps the most widely used punishment procedure generated by the operant researcher" (p. 416). Time-out involving autistic children has been used frequently; and Steeves et al. (1970) noted that time-outs used for punishment must be so aversive to the child that he will not choose the time-out to avoid the situation. Spitanik and Drabman (1976) stated that time-out is the punishment technique most often used by clinicians. McReynolds (1969) "assessed the effectiveness of time-out from positive reinforcement as a training procedure viewed as

having potential punishing and negatively reinforcing functions" (p. 199).

Effectiveness of Time-out When Viewed as a Punishment

Hewett and Taylor (1980) cited the case of a special education classroom for distrubed children that contained a built-in time-out room. The door to the room was self-locking; and the room, itself, contained no windows and was lit by a ceiling light bulb. If the child refused to go to the time-out room when instructed he would be physically forced to do so. The media became involved in the situation when a new student arrived and was physically forced into the room after a display of inappropriate behavior. The light bulb had been broken and the child, who had remained locked up for 2 hours, emerged with bleeding fingers from scratching the door. Time-out had been used as an aversive stimulus. The authors noted that the message to the child was "we are bigger and stronger than you, and we will punish you when we think you are bad", this message completely violates the principle of time-out as a constructive "lack of opportunity to receive positive reinforcement" (pp. 119-120).

Holtz, Azrin, and Ayllon (1963) studied the effectiveness of time-out when used as a punishment on human behavior and found that the mildness of time-out as an aversive event rendered it ineffective. Baron, Kaufman, and Rakauskas (1967) investigating the same premise concluded that time-out punishment failed "to produce response suppression (which) was attributed to the fact that reductions in rate would have been accompanied by reductions in reinforcement frequencies as well" (p. 329). Willoughby noted that time-out will probably not have a lasting effect upon suppressing undesirable behavior if the punished response provides the only lasting means of reinforcement (1969). In examining the punishing effects of

time-out Solnick et al. (1977) felt that the "effectiveness of time-out was influenced by (the) characteristics of the time-in setting" (p. 421). Time-out was not an effective punisher when time-in was not reinforcing. In a study involving time-out durations, Zimmerman and Baydan (1963) indicated the type and intensity of punishment needs to be closely monitored; "punishment of too great an intensity will result in the suppression of overall behavior" (p. 597).

Firestone (1976) studied the effects of time-out on the aggressive behavior of a nursery school child. The author found that although the procedure eliminated the child's bizarre behavior it also appeared to decrease the interaction the child had with his teachers. Firestone noted "it is possible that, through association, Billy stopped asking questions, telling stories and helping with chores because the teachers became negative stimuli to be avoided" (p. 81). Adams and Popelka (1971) reported on time-outs as punishment on stutterers and found that the stutterers would seek time-out as an escape from the pressures of performance.

Time-out, it would appear, brings about rapid results (Benoit and Mayer, 1975) and may be extremely reinforcing to the implementer. The authors reported that it may be a "disadvantage because some teachers find it so reinforcing that they begin to use time-out for even minor infractions" (p. 505). Literature suggests that a time-out procedure may lift the morale of the professional working with the subjects; a fact that may actually lend support to the claim that time-out may be used more to mollify staff rather than provide therapeutic resources for the subject (Jensen and Womack, 1967; Barton et al., 1970).

Plutchik et al. (1978) reported that although time-out appeared to be a superior form of punishment there are several disadvantages:

> first, time-out permits the occurrence of avoidance or escape responses such as fantasy or self-stimulation. Second, the use of time-out presupposes that the individual is operating under "normal" reward conditions...Third, time-out removes the individual from the opportunity to learn desirable behavior and makes no provisions for learning alternative behavior (p 578).

They also noted several complications that indicated isolation had not been effective. The complications included an increase in assaultiveness and self-destructiveness.

Plutchik et al. (1978) also surveyed patients who had been isolated and found that they felt angry at the staff for placing others in isolation and worried that they might also end up there. They stated they felt alone, angry, depressed, helpless, safe, disgusted and confused. Many of them felt that isolation had helped them calm down, but also made them feel frustrated; 40% felt that isolation was not helpful to them at all.

Legal Challenges

Considerable litigation has occurred concerning issues in the treatment of handicapped and disturbed individuals. Two cases have specific bearing on the appropriate use of time-out as a behavior modification procedure.

In Wyatt vs. Stickney (Martin 1977) the court examined the use of behavior modification and prescribed that "no resident shall be subjected to a behavior modification program which attempts to...develop new behavior patterns when such behavior modifications serve only institutional convenience." (pp. 178-179) There is a clear opportunity for institutional abuse of time-out where patients can be placed conveniently away and then

forgotten for hours. Martin noted that the findings in the case of Morales vs. Turman should end this problem:

> the judge declared that isolation for disciplinary reasons was a sufficiently severe deprivation of liberty that it required due process procedures. This means that in advance of the isolation there must be notice of intent to discipline, a period of time to allow the inmate to prepare a defense, and a hearing. Obviously, the theoretical bases for Time-Out could not be served by this delay so the technique might as well be discarded. (Martin, p. 86)

METHOD

Subjects

Subjects were 29 emotionally disturbed children (CA range = 6-13 years) served in a 20 bed capacity residential school and treatment program. Subjects were diagnosed moderately/severely emotionally disturbed (25 males, 4 females) and were randomly selected from all children served by the facility over a period of 6 years. Analyses of the data by sex indicated no differences even approaching statistical significance on major variables. Therefore, males and females were combined to form the sample.

Treatment Program

The residential program employed a treatment modality generally described as a therapeutic milieu. Children received both individual and group psychotherapy and special education. The classroom and the living units were located in the same building. Children lived in two units of 10 children generally organized by chronological age. Behavior modification procedures targeted behaviors considered both inappropriate for group living in the residential program as well as inappropriate behaviors obstructing reintegration into normal family units. Professional staff implementing behavior modification procedures included classroom teachers and residential child care workers.

Use of Time-Out

The use of time-out as a behavior modification procedure was identified as a technique that would allow the program to continue serving aggressive and acting-out children by minimizing the effect of disruptive

children on the treatment program of other children. The child displaying inappropriate behavior could be removed from the group thereby reducing possible contagion while simultaneously modifying the individual child's behavior.

Both the exclusion (E:TO) and isolation (I:TO) varieties of time-out were employed. E:TO removed the child from the activity in progress by placement in a portion of the room not being used or in the hall. E:TO was used as one of various staff interventions for inappropriate behavior. I:TO involved placing the child in a separate room used exclusively for time-out. I:TO was used as an intervention only when all other interventions had been attempted without success. The 8 by 15 foot room was bare, contained no outside window and was lighted by a single fixture. The room was appropriately ventilated and the child could be observed through a small window in the locked door. The child was verbally directed to the appropriate time-out area and was physically placed in time-out only when this directive was refused.

Staff were instructed to inform the child of the inappropriate behavior when placed in time-out and repeat the procedure when the time-out was concluded. Duration of time-out was contingent on the discontinued display of inappropriate behavior. The staff removed the shoes and belt and emptied the pockets of each child placed in I:TO. The staff was instructed to check children in I:TO every 5 minutes.

Procedure

Behavior resulting in placement in E:TO and the subsequent behavior were recorded by the staff member making the placement. Behavior resulting

in placement in I:TO and the time-out duration were also recorded by the placing staff member. The record of these time-out placements were placed in a central file and constitute the major source of data analyzed and reported.

Behaviors were coded by major descriptors and assigned a weighted value by severity. The behaviors and their weighted values included: 1) arguing, 2) verbal abuse of peers (swearing, taunting or antagonizing), 3) routine refusal (assigned duties, preparing for mealtime), 4) rule breaking, 5) disruptive (verbal or physical), 6) fighting, 7) refuse staff directive, 8) verbal abuse of staff, 9) leaving grounds (irrespective of duration or distance), 10) destruction of property, 11) peer abuse, and 12) staff abuse. Severity levels were assigned based on program administrative policy, treatment philosophy and staff agreement.

RESULTS

Frequencies for both exclusion time-out (E:TO) and isolation time-out (I:TO) use are reported by behavior in Table 1. E:TO frequencies are more evenly distributed than those for I:TO. It is assumed that this was because E:TO was used as an intermediate intervention. One notable exception is physical abuse of staff. In the vast majority of cases no intermediate interventions were attempted and the child was placed directly in I:TO. It might also be assumed that proportionate I:TO use would increase with severity of behavior. This does not appear to be the case. It is apparent that this is due to the effects of E:TO.

Mean antecedent and subsequent behavior values obtained with E:TO use are reported in Table 2. The mean subsequent behavior value increased significantly ($t=14.036$, 28df, $p<.001$) from mean antecedent behaviors. This trend was noted for all subjects.

Behavior values and duration of I:TO are reported in Table 3. I:TO placements (N=2071) were analyzed using four separate total time elapsed configurations; 0-5 vs. over 5 minutes, 0-15 vs. over 15 minutes, 0-30 vs. over 30 minutes, and 0-60 vs. over 60 minutes. Mean behavior values were significantly higher in three configurations; over 5 minutes ($t=3.464$, 49df, $p<.01$), over 15 minutes ($t=5.611$, 56df, $p<.001$), and over 30 minutes ($t=3.428$, 52df, $p<.01$). The over 60 minutes group is probably affected by small N (27) but it is noted that the mean behavior value is the lowest among all groups.

TABLE 1. TIME-OUT FREQUENCY AND OBSERVED BEHAVIOR

Value	Behavior	Exclusion Time-out	Isolation Time-out	Total
1	Arguing	41	3	47
2	Verbal Abuse of Peer	114	45	159
3	Routine Refusal	259	20	279
4	Rule Breaking	140	15	155
5	Disruption	734	770	1504
6	Fighting	141	59	200
7	Refuse Staff Direction	555	426	981
8	Verbal Abuse of Staff	87	121	208
9	Runaway	53	16	69
10	Destruction	47	97	144
11	Peer Abuse	128	96	224
12	Staff Abuse	44	362	406

TABLE 2. MEAN VALUES OF ANTECENDENT AND SUBSEQUENT BEHAVIOR FOR EXCLUSION TIME-OUT USE

Subject Number	Subject Observed	Antecendent Behavior Mean	Subsequent Behavior Mean
1	79	4.92	6.06
2	20	4.70	7.50
3	29	6.17	7.21
4	7	4.80	6.14
5	14	4.46	7.93
6	41	5.66	7.95
7	21	4.95	6.19
8	6	5.00	7.50
9	8	4.13	5.38
10	5	4.60	6.00
11	3	6.00	7.33
12	6	6.50	8.17
13	29	5.48	6.66
14	28	4.82	6.68
15	2	4.50	6.00
16	18	6.22	8.00
17	67	5.71	6.97
18	141	5.74	7.00
19	169	5.91	6.43
20	2	5.50	7.50
21	32	5.09	6.44
22	36	5.18	7.03
23	12	6.67	7.08
24	52	6.21	8.08
25	4	5.25	7.25
26	52	5.74	7.37
27	15	5.20	7.00
28	9	7.13	9.22
29	24	5.22	7.33
TOTAL	931		

t value = 14.036 df = 28

$p < .001$

TABLE 3. MEAN BEHAVIOR VALUES AND TIME ELAPSED IN ISOLATION TIME-OUT (N = 2071)

Time Elapsed (Minutes)	Frequency	Mean	df	t value
0-5	108	7.280	49	3.464*
Over 5	1963	7.771		
0-15	1055	7.398	56	5.611**
Over 15	1016	8.067		
0-30	1852	7.658	52	3.428*
Over 30	219	8.022		
0-60	2044	7.802	38	0.296
Over 60	27	6.665		

* $p < .01$
** $p < .001$

DISCUSSION

Based on time-out frequencies, both E:TO and I:TO effects appear to have resulted in short-term control rather than modification or amelioration of inappropriate behaviors. Discrepancies between E:TO and I:TO use are probably due to inconsistent application which could be expected to contribute to this phenomenon. The behaviors considered undesirable and their judged relative severity are also noteworthy. Though certainly paralleled in other settings, more than one-third of the behaviors are related to programmatic needs. The assigned severity values are also interesting to the extent that they parallel (or fail to) other settings (verbal abuse of staff is more severe than fighting). Appropriate use of any behavior modification technique necessitates targeting of behaviors that approximate reality or what is desirable. The example cited could easily be interpreted to mean that the staff is more concerned about how children speak to them than in two children fighting with a potential of inflicting harm.

E:TO is generally considered a low intensity intervention that is best used as an intermediate step to interrupt undesirable behaviors. The data reported in this study is a clear indication that E:TO can have an exacerbating or additive effect. Considering the broad range of behaviors represented it appears that alternative intervention strategies should be used. The use of E:TO increased the behavior severity which also effected the use of I:TO in this study.

Behaviors with lower severity values required shorter durations of I:TO. This holds true as duration increases and higher severity behaviors

are released from time-out. I:TO efficacy is greater with lower severity behaviors and for short durations. If E:TO exacerbates behavior severity and increases the use of I:TO the appropriateness of time-out generally can be raised. More effective intermediate interventions might obviate the need for higher intensity intervention and time-out would be contra-indicated.

No final conclusions can be made relative to the use of time-out based on the results of this study. Little is added, however, to recommend it. The treatment program that provided the sample for this study continued the use of time-out over an extended period of time with limited analyses of its therapeutic effect on children. Except for studies designed and conducted to report in the research literature, this practice is probably more the rule than the exception. Expedient methods that effectively control undesirable behaviors might sacrifice long-term outcomes for short-term effectiveness.

The opportunity to directly observe the treatment program over a two year period leads to some additional observations and conclusions albeit subjective in nature. The availability of a locked time-out room to control physically aggressive children was an obvious comfort to the staff. Reactions from children ranged from considerable fear to dramatically heightened activity levels. It appeared that the time-out room was used more in response to the staff losing control of a child rather than a child losing control of his behavior. Though indicated in the data, the inconsistent application of time-out was more obvious during direct observation. The number of intermediate interventions attempted prior to time-out varied considerably among staff members. The treatment

philosophy emphasized structure in such a way that the use of time-out appeared to be directly related to attempts to impose stricter limits. The limits took the form of rules that numbered in excess of reasonable short-term memory.

The literature suggests that time-out is most effective with specifically targeted behaviors. The use of time-out as an intervention underpinning an entire treatment program seems ill-advised and unlikely to meet the treatment goals of individual children.

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